

Note on Hind's Variable Nebula in Taurus. By S. W. Burnham.

Not long since I found a new double star in the vicinity of Hind's supposed variable nebula, and took occasion when the measures of the new pair were finished to examine the place of the nebula with the 36-inch refractor. The atmospheric conditions were always favourable. The distance of the components of the double star referred to is only $0''.16$, and, therefore, it would have been useless to turn the telescope in that direction when the definition was inferior.

The nebula is easily found from the 8.7 mag. star, D.M. $+19^\circ$, 704 , which is 15^s p and $4' s$. The place of the nebula, as given by Dreyer, on the authority of D'Arrest, is identical with that of D.M. $+19^\circ$, 706 , the magnitude of which was estimated by Argelander as 9.4 ; and this is τ *Tauri* of the variable star catalogues. On October 11 this star was estimated to be about 11.5 mag., but subsequent examinations indicated that it should be placed lower in the scale. I measured the difference in declination between this and the brighter star 15^s preceding; but finding the two stars could be connected directly by using the lowest micrometer eye-piece, the angle and distance were also measured on two nights. The measures in declination are as follows:—

1890.775	Diff. decl.	$+243''.65$
.777		$243'.40$

The direct measures are:—

			Mag.	
1890.775	$43^\circ 5'$	$336''.31$	8.3	11.5
.777	$43^\circ 8'$	$336''.07$	8.4	12.5

This small star, if it is a star, is placed within a very small condensed nebula. It is somewhat elongated in the direction of $151^\circ 7'$. A rough reading of the wires gave $4''.4$ for the length of the nebula in this direction. It is less extended on the opposite side of the star or nucleus, with a shorter diameter of perhaps half that measured. It was examined with various powers, but it was impossible to say whether or not it had a disc like that of an ordinary star. If it were the bright nucleus of the small nebula, it would probably present the same stellar appearance. It will be noticed that this description of the nebula does not correspond with that in the early observations, where it was noted, when it was seen at all, as about $1'$ in diameter.

On October 15 I asked Mr. Barnard to examine this region with the large telescope. His great experience in work of this kind, and remarkable acuteness of vision in detecting extremely faint, diffused objects, which would escape the ordinary observer, are well known. After careful attention he was able to see an excessively faint, round nebula, about $\frac{3}{4}'$ from the one previously described, in the estimated direction of 185° . This faint nebulosity was about $40''$ or $50''$ in diameter, and apparently not connected with the variable, and was of nearly the last degree of faintness for the light-power of the large instrument. It is, perhaps, too faint for any other telescope. I should not have seen it independently. Neither Mr. Barnard nor myself on any occasion could see the slightest trace of the $O\Sigma$ nebula (seen also at times by D'Arrest, Tempel, and others, but invisible in the Rosse reflector), which should be $15''$ preceding Hind's, nor any nebula in the immediate vicinity. Subsequently we looked at the small nebula with the 12-inch telescope, by way of getting a better estimate of its magnitude, and found that it was a very faint object, and in appearance precisely like any ordinary star of that magnitude. The nebulous surrounding was completely lost with the smaller instrument. I do not think it can be any brighter now than 12.5 mag. of the scale used in my double-star observations.

On the night of November 1 Mr. Keeler examined the nebula with the small spectroscope attached to the 36-inch telescope, and found that it was probably of the usual gaseous type, although on account of the extreme faintness of the nebula only the principal line at $\lambda 5005$ was visible. The spectrum of the nucleus could not be seen.

Nothing seems to be definitely known of the period of this variable, *T Tauri*, and it seems to have been as much neglected as the nebula. It should be easy to determine, at least approximately, the extent and time of its change, and it is to be hoped that variable-star observers will give this object systematic attention. An instrument of moderate size will answer this purpose. It is probably now not far from its minimum brightness, in which case the variation must have a range of at least three magnitudes. A large aperture will be necessary to ascertain whether the small nebula, which is now visible immediately about the nucleus or star, is also subject to any change. I hope to be able to settle this question hereafter by making occasional examinations with the 36-inch refractor.

Lick Observatory:
1890, November 8.

New Nebulæ. By W. F. Denning.

The following nebulæ were discovered in *Camelopardus* while comet-seeking with a reflector of 10 inches aperture. With the exception of Nos. 1 and 10, they were first seen with a power of 60, field 50'. The positions may be regarded as correct within about 2' or 3', and they have been determined by comparison with small stars, which were kindly identified for me by Dr. Copeland, the Astronomer Royal for Scotland:—

No.	Date of Discovery.	Position for 1890.		Description.
		R.A.	N.P.D.	
		^h ^m ^s	[°] ['] [″]	
1	1889, Aug. 26	4 29 59	14 34.8	F.S, bM, ★ 12 Np.
2	1890, Nov. 7	4 40 19	11 52.1	F.S.R.
3	1890, Oct. 19	4 46 38	21 50.2	F.S.R., bMN, F dou.★ Sf.
4	1890, Nov. 16	5 50 7	9 29.0	vF, S.
5	1890, Nov. 9	6 11 45	6 58.1	F.S.R, mbM.
6	1890, Oct. 17	6 59 26	4 15.0	vF, vvS, 12' SSf, NGC 2300.
7	1890, Nov. 7	7 8 52	9 52.6	vF, pS, 22' SSf, NGC 2336.
8	1890, Sept. 14	7 23 24	4 30.0	F.S.E., 46' Sf, NGC 2300.
9	1890, Sept. 8	8 21 37	3 52.6	pF, S, mbM, ★ Nf.
10	1890, Aug. 23	8 34 30	4 5.6	F.S.R., gbM. In same field as preceding and Sff.

The place of No. 1 is probably very accurate, as it was given me by M. Charlois, of the Nice Observatory, who observed the nebula at my request.

Bristol: 1890, November 25.

Notes on Celestial Photographs taken at the Sydney Observatory.
By H. C. Russell, B.A., F.R.S.

Since I sent you copies of some of my photographs of the Milky Way, &c., it has occurred to me that it was desirable that I should, with the same lens, &c., plate-development, and exposure, take a picture of some object well known to the members of the Royal Astronomical Society, so that there should be some measure of the work I have been doing upon southern objects. I therefore selected *Orion*, and upon an evening of average clearness I exposed a plate for four hours, and developed it as I did my other photographs. The glass positive and silver print from this which I have sent herewith will show better than any words what the photograph is like. Suffice it here to say that the